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| |  |  |  | | --- | --- | --- | |  | A new paradigm for educational change**.**  by Robert J. Marzano , Steve Zaffron , Linda Zraik , Sanford L. Robbins , Lois Yoon  One of the constants within education is that someone is always trying to change it. That is, it seems that someone is always proposing a new practice, a new program, a new technique to change education for the better. Yet many seemingly powerful change-oriented innovations are short-lived. For example, Cuban (1987) has chronicled the fate of a number of educational innovations over the last three decades. Some of the more visible one that have not endured include: programmed instruction, open classrooms, the Platoon System, differentiated staffing and flexible scheduling. An important question relative to these defunct innovations is "Why did they fail?" All seemed quite logical at their conception. Many were research based.  An answer has been proposed by those who study the phenomenon of change. Researchers and theorists who study the change process assert that the failure of many innovations is not due to inherent weaknesses in the innovations themselves but in the basic nature of the change process. Specifically, Watzlawick, Weakland and Fisch (1974) distinguish between two types of change-first order change and second order change. The most important aspect of this distinction is that first and second order change involved two distinct processes. One-first order change is more psychological in nature, the other- second order change is more ontological in nature. We briefly consider the psychological approach before examining the ontological approach in some depth.  The Psychological Approach  The psychological approach to change assumes that any innovation must be assimilated into the beliefs and basic operating principles of those for whom the innovation is proposed. Specifically, the psychological approach asserts that individuals involved in an innovation or change inevitably and gradually progress through a developmental set of psychological phases with regard to the innovation or change. Perhaps the most popular educational model used to described these changes is the Concern Based Adoption Model or CBAM by Hall and Loucks (1978). That model identifies seven phases or stages individuals progress through as they become aware of, understand and then gradually accept and then apply an innovation. Those stages are:  Stage 1  Awareness: participants exhibit little awareness about the innovation  Stage 2  Informational: participants exhibit an awareness of the innovation and a desire for more information about the innovation  Stage 3  Personal: participants are uncertain about the demands of the innovation and are concerned about how it will affect their lives  Stage 4  Management: participants have basically "accepted" the innovation as useful and are concerned about accurately and effectively utilizing the innovation  Stage 5  Consequences: participants are concerned about the impact of the innovation on their clients (i.e., commonly students within education) and their work in general  Stage 6  Collaboration: participants' concerns are focused on coordination and cooperation with others regarding the innovation  Stage 7  Refocusing: participants' concerns are focused on improving the innovation or identifying other uses of the innovation  Underlying the CBAM model (and other psychologically based models) is the assumption that innovations must fit within individuals' beliefs and perceptions. More specifically, the very notion of acceptance explicit in the management stage of the CBAM model implies a framework of beliefs and principles into which an innovation must be integrated. If integration does not occur, the innovation is rejected - in CBAM terms, the innovation never gets past the personal stage in the minds of those for whom the innovation is intended. One's existing set of perceptions and beliefs, then, appears central to how one interacts with proposed changes. Indeed, beliefs and perceptions have been shown to be organized into complex networks called "paradigms", and it is paradigms that drive behavior.  The introduction of the concept of paradigm to modern day science is commonly credited to Thomas Kuhn and his influential book, "The Structure of Scientific Revolution" (1962) although it can be traced to the philosopher Hegel. Kuhn equated the commonly held perspective relative to a phenomenon with the paradigm relative to that phenomenon. For Kuhn, then, a paradigm was a mental perspective or "mental set" one took while engaged in scientific inquiry. Since its initial introduction as a perspective taken during scientific inquiry, the concept of paradigm has been used to describe a plethora of human endeavors. For example, as it relates to everyday functioning, Lincoln and Guba (1985) define paradigms as systematic sets of beliefs that help one make sense of the world. To illustrate, a teacher might possess a belief that students of certain ages are difficult to teach. A school administrator might have a belief that teachers with certain characteristics are difficult to interact with. These beliefs, then, help the teacher make sense of the students' actions and the administrator make sense of the teachers' actions. In short, actions and events are interpreted in light of these paradigms. Referring to paradigms as a "theory of the world in our heads," Frank Smith notes that:  What we have in our heads is a theory of what the world is like, a theory that is the basis of all our perceptions and understanding of the world, the root of all learning, the source of all hopes and fears, motives and expectancies, reasoning and creativity - If we can make sense of the world at all, it is by interpreting our interactions with the world in the light of our theory. The theory is our shield against bewilderment. (Smith, 1982, p. 57)  One of the paradoxical features of paradigms is that their interpretative power creates unavoidable "blind spots" in our perceptions. That is, paradigms both enable and inhibit perception. On one hand, they provide frameworks with which to organize sensory stimuli, on the other hand, they limit what can be perceived because of inherent assumptions that underpin them. As Patton explains, paradigms are the basic structures we use to interpret the world. They tell us what to do and what to expect in every situation without the need for deep philosophical consideration.  But it is this aspect of paradigms that constitute both their strength and their weakness - their strength in that it makes action possible, their weakness in that the very reason for action is hidden in the unquestioned assumptions of the paradigm (Patton, 1978, p. 203).  Just a paradigms have been used to explain the behavior of individuals, so too, have they been used to explain the nature and function of culture. Specifically, culture can be defined as the shared beliefs-shared paradigms - of a set of people. As Sathe notes, culture is the "set of important understanding (often times unstated) that members of a community share in common." (1983, p. 6). Richard Paul notes that in the extreme, these shared beliefs can engender sociocentricity or, stated in nontechnical terms, the tendency of members of a society to behave as though the members of their group are categorically different from and better than members of other groups (Paul, 1990, p. 259).  Paradigms, then, not only dictate what individuals perceive (and what they do not perceive) regarding the world around them, but shared paradigms form the very fabric of culture dictating what is accepted and not accepted, what is perceived and not perceived within a society.  Given the importance of paradigms to the functioning of individuals and societies, it is clear from the psychological model of change why some innovations are doomed to failure from their outset - they simply do not fit within existing paradigms. That is, to progress through the CBAM stages an individual or a culture must eventually "accept" the innovation as consistent with the reigning paradigms. By inference one can conclude that this occurs between the "personal" and "management" steps of the CBAM model. If an innovation is not consistent with an existing paradigm, individuals or an entire culture never get past the personal stage. Paradigms, then, form the boundaries or parameters of possible change. Proposed changes that do not fit within existing paradigms simply do not succeed. If it were not for the fact that paradigms can "shift," there would be little or no hope for substantive change within a culture or any given system within a culture.  The Nature of Paradigm Shift  Thomas Kuhn not only popularized the concept of paradigm, he also introduced the notion of paradigm shift - the radical and sometimes spontaneous change in a paradigm. He noted that "normal science" occurs from discontinuous breakthroughs that demand a whole "new" perspective relative to the phenomenon under study. In short, revolutionary science occurs through a shift in existing paradigm.  Where Kuhn introduced the concept of paradigm shift, Tofler (1984) described the dynamics of such radical change. He explained that a paradigm shift occurs when one or more of the basic elements of a system are altered:  Imagine a primitive tribe. If its birthrate and death rate are equal, the size of the population remains stable. Assuming adequate food and other resources, the tribe forms part of a local system in ecological equilibrium.  Now increase the birthrate. A few additional births (without an equivalent number of deaths) might have little effect. The system may move to a near-equilibrium state. Nothing much happens. It takes a big jolt to produce bit consequences in systems that are in equilibrium or near equilibrium states. But if the birthrate should suddenly soar, the system is pushed into a far-from-equilibrium condition, and here non-linear relationships prevail. In this state, systems do strange things. They become inordinately sensitive to external influences. Small inputs yield huge, startling effects. The entire system may reorganize itself in ways that strike us as bizarre. (Tofler, 1984, p. xvi)  In their analysis of Tofler's description. Sawata and Caley (1985) explain that to create paradigm shift a system must be pushed to a far from equilibrium state and held at the state for an extended period of time. As the example of the primitive tribe illustrates, movement to a far from equilibrium state is commonly precipitated by drastic changes in variables that affect resources (e.g., birth rate). In education such variables might include a change in funding formulae, vouchers, and abolishment of district. However, as the example of the primitive tribe illustrates, paradigm shifts generated by the movement of a system to a far from equilibrium state can be quite unpredictable and not necessarily positive. That is, paradigm shifts generated from spontaneous changes in variables can be quite dangerous. In short, it is important to remember Tofler's warning that the entire system may reorganize itself in ways that strike us a bizarre.  Fortunately, paradigms may shift in a more controlled and less dangerous fashion. This occurs when members of a society conclude that their paradigms are no longer useful or effective as tools to interpret and interact with existing situations. In effect, a second type of paradigm shift occurs when existing paradigms are judged as "bankrupt" by those who live within them. It is this type of paradigm shift that we refer to as second order change. It is this type of paradigm shift that is ontological in nature.  The Basis of the Ontological Approach  Although basic to the study of philosophy, ontology is, unfortunately, a foreign domain to most educators. According the Dictionary of Philosophy, ontology is the study of being (Runes, 1984, pp. 285 and 212) or, in terms more germane to this article, it is the study of the basic assumptions which underpin our paradigms. To understand the relationship of ontology to second order change one must first understand the inter-relationships among language, thought and paradigms.  One of the most powerful distinctions within the ontological approach to change is that paradigms exist or dwell within language. In fact, philosopher Martin Heidegger referred to language as "The House of Being" (heidegger, 1977, p. 193.) This might seem counterintuitive if one assumes that language is simply a reporting or encoding of thought. However, such a position assumes a narrow and inaccurate view of the nature and function of language. Many cognitive psychologists postulate that thought has two basic forms or exists in two basic systems: a linguistic system and a non-linguistic system (Gazzaniga, 1985; Gazzaniga & LeDoux, 1978; Paivio, 1971). The non-linguistic system is actually a set of related systems that include information represented in a variety of sensory modes (e.g., mental pictures, smells, and so on). The linguistic system is a unique form of coding that arguments and, over time, synthesizes the non-linguistic system. For example, Gazzaniga and LeDoux (1978) state that "the behaviors that these separate (non-linguistic) systems emit are monitored by the one system we come to use more and more, namely, the verbal nature language system" (p. 156). In other words, over time, the linguistic system be comes dominant.  It is the format in which information is represented linguistically that serves as an operational basis for defining thought. Specifically, the most popular mode for describing the basic unit of though within the linguistic system is the proposition. The concept of a proposition has a rich history in both psychology and linguistics (Frederiksen, 1975; Kintsch, 1974; Norman & Rumethart, 1975). In simple terms "a proposition is the smallest unit of knowledge that can stand as a separate assertion, that is, the smallest unit about which it makes sense to make the judgment true or false" (Anderson, 1990, p. 123).  One of the most important characteristics of propositions as they relate to paradigms and second order change is that all human experience is encoded in propositional form. In fact, humans cannot help but encode their experience as propositions. For example, Figure 1 represents a small portion of the propositional network an individual might use to encode his experience of going to the store to buy his father a present.  Note that the lines in Figure 1 are labeled agent, location and so on. These represent the relationships that language imposes on the information we receive from the senses. In other words, language forces us to interpret or "encode" the information we receive from our senses into propositions that articulate relationships among different entities. As McNeil (1975) notes, human beings partition their experiences into agents, objects, location, and the like, even when experiences do not necessarily fit into these partitionings.  Based on this notion, some theorist have conjectured that the basic propositional form of language shapes perception. Whorf's (1956) concept of linguistic relativity epitomizes this assertion. Building on the teaching of Sapir (1921), Whorf proposed that we dissect nature along the lines laid down by our native languages. The thoughts we isolate from the world of sensory stimuli are not there because they stare every observer in the face: "On the contrary, the world is presented in a kaleidoscopic flux of impressions which has to be organized by our minds-and this means largely by the linguistic systems in our minds" (Whorf, 1956, p. 213).  Paradigms, then, can be operationally defined as propositional networks created by our linguistically determined encoding of information from the senses. From this perspective, it is clear that paradigms are, first and foremost, human constructions that dwell in language, and it is this characteristic that provides the power behind the ontological approach to change.  How the Ontological Approach Works  In contrast to the psychological approach to change which operates within existing paradigms, the ontological approach to change seeks to provide individuals with: 1) an experience of their paradigms as constructed realities as opposed to absolute reality, and 2) an experience of consciousness other than the "I" embedded in their paradigms. These experiences provide individuals with an opportunity to try out new paradigms that might allow them to be more effective in dealing with current problems.  Some philosophers and psychologist assert that it is part of the human condition to equate one's paradigms or interpretation of the world with the reality of the world. As philosopher Rorty notes, "it is easy to run together the fact that the world given states and events with the assumption that our linguistic description of those states and events along with their causes and consequences is, in fact, the truth" (Rorty, 1989, p. 13). In effect, says Rorty, we confuse our descriptions of the world with world itself. The ontological approach to change seeks to provide individuals with this unique perspective - one which Perry asserts is the critical juncture in the development of an autonomous learner. Specifically, Perry (1981) characterizes both ethical and cognitive growth as involving the central realization that there are differing perspectives or interpretations as to the nature of truth. Without such a realization, asserts Perry, the learner is trapped in a dualistic interpretation of the world - one in which everything is perceived in terms of absolutes:  Good versus Bad, Right versus Wrong. We versus They. All that is not Success is Failure, and the like. Right Answers exist somewhere for every problem and authorities know them. Right Answers are to be memorized by hard work. Knowledge is quantitative. Agency is experienced as "out there," Authority, test scores, the Right job (Perry, 1981, p. 79)  The experience of consciousness other than the "I" embedded in one' propositional networks might be considered a natural outgrowth of the experience of paradigms as interpretations of reality as opposed to reality itself. Human beings quite naturally define themselves as the "i" within their propositional networks. For example, the individual who generated the propositional network in Figure 1, would define who he is by the cumulative information continued in the propositional networks which contain an "I" element. In other words, human beings obtain their sense of "self" from the "I" in theft propositions. In fact, the normal state of human consciousness is that the "I" is the self. However, if propositional networks are created interpretations, then the "I" components of those networks are themselves creations. In effect, there must exist something which creates our propositional networks or, stated differently, there must be a self separate from the "I" of our thinking. This is the self that McCarl (1993) refers to as the transcendental consciousness. It is a form of consciousness within which commitments can be made.  In summary, two experiences - namely, the experience of paradigms as interpretations and the experience of a consciousness other than the "I" of one's paradigms - form the basis of the ontological approach to change. More accurately, these experiences allow one to interact with situations and events in ways that provide access to second order change.  A New Way of Being  Ultimately second order change is brought about by interacting with events and situations in a new way. This "new way of being" involves: 1) experimentation with new paradigms and 2) commitment to selected paradigms.  One "way of being" that is quite different from the common way of interacting with the world is to experiment with new paradigms when old paradigms are viewed as limiting - when old paradigms are declared bankrupt. Rorty explains this as a process of inventing new tools: "the proper analogy is with the invention of new tools to take the place of old toos ... (it) is more like discarding the lever and the chock because one has envisioned the pulley or like discarding gesso and tempera because one has now figured out how to size canvas properly." (Rorty, 1989, p. 12) This flexibility of perspective has been identified by psychologist Amabile (1983) as central to creativity. That is, a fundamental dynamic of the creative process is experimenting with new ways of looking at things. Oftentimes, says Amabile, even a slight change in one's perspective (paradigm) open up an entirely new vista of possibilities.  Once multiple paradigms have been considered, one may be adopted. In effect, a paradigm shift may occur through volition rather than through drastic changes in resource variables. Key to such conscious or controlled paradigm shift is commitment on the part of those who have adopted the new paradigm. In fact, without commitment, second order change does not exist.  Psychologist Corno (1993) explains that action control theory is the foundation for modern studies of commitment. Although a discussion of action control theory is beyond the scope of this article, its most relevant feature is that "different information processing principles seem to account for performance before and after the point of commitment." (Corno, 1993, p. 14) In fact, Heckhausen and Kuhl note that once individuals have made a commitment to a selected paradigm, they have crossed a metaphorical Rubicon. No more are their energies devoted to weighing alternatives or considering contingencies. Rather, energies are focused on manifesting the commitment. In short, individuals behave in a totally different manner than they did prior to the commitment and, consequently, the world occurs for them in an entirely different way. (Heckhausen and Kuhl, 1985)  It is commitment, then, to new paradigms consciously selected as opposed to culturally or situationally imposed that is at the core of second order of change. In fact, in Perry's schema of intellectual and moral development, the ability to make commitments to selected paradigms represents the highest level of development. (Perry, 1981).  The Ontological Approach in Action  One danger in describing the ontological approach to change is that it might appear as an intellectual game rather than as a viable tool for innovation within education. In fact, the ontological approach to change has been practiced within business and industry for at least a decade. Specifically, Landmark Education Corporation has developed an educational experience that provides access to second order change. The format of the experience is a three day seminar during which a workshop leader interacts with participants in such a way that participants have an opportunity to interact with the world around them in a new way - one in which they can objectively consider new paradigms and ultimately make commitments to selected new paradigms.  Drawing on the work of Heidegger, the leaders of the program refer to the interaction patterns used within their seminars as "authentic" speaking and listening. Authentic speaking and listening involves taking possession of one's self as one is. The authentic self is not one which managed to escape everyday throwness of human being; rather it is a self which has taken hold of that throwness in its own way. It has appropriated the everyday way of being, recognized it, allowed it, and owned it, rather than continuing to be owned by it. In terms of the previous discussion, authentic listening and speaking involve engaging in these processes from the perspective of the "self" that is separate from, as opposed to synonymous with one's paradigms.  Although such speaking listening may appear foreign to the field of education, it is quite consistent with what educators refer to as Socratic inquiry. Noted educator, Richard Paul, has explained that at its core Socratic dialogue involves the gradual disclosure of the assumptions underlying one's system of thinking:  Socratic questioning is based on the idea that all thinking has a logic or structure, that any one statement only partially reveals the thinking underlying it, expressing no more than a tiny piece of the system of interconnected belief of which it is a part ... Its purpose is to expose the logic of someone's thought (Paul, 1990, p. 269).  The ultimate proof of the effectiveness of the seminar is the extent to which participants consider new, more effective paradigms, make commitments to selected paradigms and then naturally engage in tasks consistent with those commitments. Although the type of issues participants deal with in the seminar are not limited, there are specific domains in which seminar effects are most dramatic. (For a comprehensive review of the effects of this seminar, see Marzano and Zraik, 1993.) Specifically, participants experience a heightened awareness of a new paradigms and an opportunity to commitment to selected paradigms in the domains of: 1) relationships with colleagues, 2) relationships with supervisors, 3) relationships with supervise, 4) alignment with the school or district's goals, 5) effectiveness as a change agent, and 6) effectiveness as a communicator. Figure 2 summarizes the results in these areas.  As Figure 2 indicates (see section f), prior to the seminar only 10% of the participants even recognized a need to attend to the important area of increased relationship with colleagues, yet many would assert that a collaborative/cooperative workplace culture is fundamental to an effective institution. In effect, prior to the seminar, 90% of participants could see no reason for or possibility of substantive change in this important area. In terms more germane to this discussion of second order change, the paradigms through which 90% of participants viewed their relationships with their colleagues created blind spots to the possibility of substantive change. However, after the seminar, 94% of participants reported an awareness of new possibilities for improvement in this area and a commitment to make improvements in this domain. Again, in terms of the previous discussion of second order change, by the completion of the seminar, 94% of participants had reached a level of conscious commitment to a new paradigm for relating to their colleagues.  As Figure 2 illustrates, this shift from a perception of no need or possibility for change to a recognition of possibilities to a conscious commitment to enhanced effectiveness is equally dramatic in all six areas. Specifically in addition to the change in the domain of relationship with colleagues, the following trends were noted:  a) prior to the seminar 19% of participants reported a need for or possibility of substantive change in the domain of relationship with administrators; after the seminar 91% reported a recognition of the possibility for change and a commitment to enhancing this relationship - an increase of 72% in terms of levels of awareness and commitment.  b) prior to the seminar 13% of participants reported a need for or possibility of substantive change in the domain of relationship with those supervised; after the seminar 93% of participants reported a recognition of the possibility for change and a commitment to enhancing this relationship - increase of 80% in terms of levels of awareness and commitment.  c) prior to the seminar 0% of participants reported a need for or possibility of substantive change in the domain of alignment with the goals of their school or district; after the seminar 94% of participants reported a recognition of the possibility for change and a commitment to increased alignment - a 94% increase in levels of awareness and commitment.  d) prior to the seminar 9% of the participants reported a need for a possibility of substantive change relative to their effectiveness as a change agent; after the seminar 95% of the participants reported a recognition of the possibility for increased effectiveness as a change agent and a commitment to increased effectiveness - a 86% increase in levels of awareness and commitment.  e) prior to the seminar 27% of the participants reported a need for a possibility of substantive change in terms of their effectiveness as a communicator; after the seminar 98% of the participants reported a recognition of the possibility of substantive change in this domain and a commitment to more effective communication - a 71% increase in levels of awareness and commitment.  Most school administrators would agree that a change in any one of the sic domains described above could have a profound impact on a school or district. For example, one can only imagine what happens within a school or district when 94% of the staff make a commitment to a greater alignment with the school or district's goals (c above) or when 86% of the staff make a commitment to being more effective change agents (d above). An interesting aside to this discussion is that the changes reported in the six domains is more dramatic in education than those reported within the business community. (For a discussion of comparative results between education and business see Marzano and Zraik, 1993.)  What is perhaps most informative regarding the effectiveness of the seminar is that five months after their involvement in the seminar 56% of those participants polled rated the lasting effects of their experience very high. In addition, 90% of the participants surveyed rated the seminar as far superior to or better than other school/district sponsored workshops that address similar issues. Those familiar with the current state of educational workshops and seminars are painfully aware that those workshops and seminars are commonly forgotten with five months after their completion.  Perhaps this is because such seminars and workshops are confined to first order change. Not surprisingly, then, a seminar designed to enhance second order change would have little if any lessening of value for participants since it would have altered the way participants interact with the world around them.  Conclusions  To date, the majority if not all of the innovations designed to improve education in substantive ways have not endured. One possible reason for these events is that those innovations simply have not addressed the dynamics of second order change which is fundamentally ontological in nature. This article has described a theoretical base for second order change and reported the results of one organization's efforts to foster second order change in schools and districts. Given the dramatic effects produced by the efforts of that organization in business and now in education, the theory and practice of second order change appears to be a fruitful area for increased research and study.  References  Amabile, T.M. (1983). The social psychology of creativity. New York:Springer-Verlag.  Anderson, J. (1990). Cognitive psychology and its implications. New York: W.H. Freeman and Company.  Corno, L. (1993). The best-laid plans: Modern conceptions of volition and educational research. Educational Researcher, 22(2) pp. 14-22.  Cuban, L. (1987, July). Constancy and change in schools (1880's to the present). Paper presented at the Conference on Restructuring Education, Keystone, CO.  Fintsch, W. (1974). The representation of meaning in memory. Hillsdale, NJ: Erlbaum.  Frederiksen, C.H. 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**Publication Information:** Article Title: A New Paradigm for Educational Change. Contributors: Robert J. Marzano - author, Steve Zaffron - author, Linda Zraik - author, Sanford L. Robbins - author, Lois Yoon - author. Journal Title: Education. Volume: 116. Issue: 2. Publication Year: 1995. Page Number: 162+. COPYRIGHT 1995 Project Innovation; COPYRIGHT 2002 Gale Group